These fruits form the first consignment of a quantity collected in Mauritius and Seychelles by Mr. Horne for transmission to Kew, as material for the *Pandaneæ* in the forthcoming Mauritius Flora, and will form a valuable addition to the Museum collection. The fruit-heads of the *Pandaneæ*, like the cones of the *Piceas*, are very difficult to preserve entire except they be kept in fluid, and even then, if they are gathered too ripe the single drupes are apt to separate from the central axis. Those just to hand from Mr. Horne are the best set ever received at Kew, inasmuch as they appear to have been carefully selected and gathered before they were too ripe, wooden tallies with numbers *cut* in them firmly fixed upon each specimen with copper wire, and the whole sown up tightly in stout sacking or canvas and placed at once in rum. In this way the collection contained in five small barrels arrived in perfect safety at Kew, where the specimens, after being taken from the spirit and the canvas coverings cut away, were securely enclosed either in a network of thin copper wire or fine strong cord and gradually dried. We mention these facts because travellers and collectors too frequently send home specimens of Conifers, Cycad cones, or others of a similar nature simply rolled in paper or packed in sawdust; in the one case they dry and fall to pieces immediately upon opening, while in the other the sawdust absorbs moisture, and the fruit or cone simply rots and becomes quite worthless. Another advantage in sending woody fruits like the *Pandani* in fluid in the manner above described, is that they can be removed, dried, and mounted on wooden stands, by which they are more convenient for examination, and occupy much less space, and are manifestly more economical both for public and private collections than when preserved in large glass jars in alcohol. The collection, numbering some twenty-three heads of fruits, sufficiently illustrates the variety of form and size in the different species, the largest being some thirteen inches through, and the smallest not more than two inches. Mr. Balfour, who accompanied the Transit of Venus Expedition to Rodrigues, has also paid special attention to the *Pandaneæ*, and his collections, preserved, we believe in a similar manner, have recently arrived in this country.

SANTAL VERT.—Under the name of *Santal Vert*, or false sandal-wood, a dark green, close-grained wood, somewhat like *Lignum vitæ*, may occasionally be seen in wood collections. The origin of this wood is not generally known, but it seems to be the produce of an Euphorbiaceous plant, probably a species of *Croton*. The bulk is obtained from Madagascar, and some from Zanzibar. It is generally supposed, however, to be the produce of Zanzibar, probably on account of that from Madagascar passing by way of Zanzibar in course of transit to India, to whence it is mostly shipped, chiefly, it is said, for the purpose of burning the bodies of Hindoos, as it fetches a much lower price than the true sandal-wood. The wood of the *Santal Vert*, though small, is sometimes used in Mozambique for furniture. A species of *Croton* found by Dr. Kirk on the Zambesi produces a similar wood; indeed, it may be identical.

SOME RESULTS OF THE "POLARIS" ARCTIC EXPEDITION

IN a letter to the French Geographical Society, published in the March *Bulletin*, Dr. Bessels, the principal scientific member of the *Polaris* Arctic Expedition, rebuts some of the statements published by Mr. Tyson, and gives some of the scientific results which were obtained. The position of the Observatory, obtained from many varied observations, was 81° 38′ N. lat., 61° 44′ W. long., and thirty-four feet above sea-level. Many careful observations were made on the tides, in meteorology, magnetism zoology, botany, geology, and with the pendulum, in order to determine the force of gravity. Unfortunately, in the catastrophe which happened to the ship, many of the results of these observations were lost; nevertheless, enough was saved to afford a fair idea of the physical geography, the geology, the fauna and flora of the region visited. Dr. Bessels is preparing a detailed account of the results obtained, and we believe has given much valuable information for the use of our own Arctic Expedition.

The pendulum observations are specially precise and valuable. The magnetic observations are more complete than any hitherto made in the polar regions. The observations on declination were made every hour for five months, and during three days in each month every six minutes. The western declination was found to be 96°, and the absolute declination 84° 23′.

The observations on the tides were made with very great care, generally every hour, and for three or four weeks every ten minutes, in order to obtain the precise moment of the flux and reflux. High water occurs about every 12h. 13m.; the highest flux observed was 8 feet; the lowest reflux, 2·5 feet; mean of high and low tide, 3·8; mean of spring tide, 5·47; mean of neap tide, 1·83. Other hydrographical observations comprehend soundings, temperatures at various depths, and detailed observations on the specific gravity of the water.

After having entered Smith Sound, a current was observed running southwards, the rate of which varied from 1·5 to 5 miles. This current carried with it much drift-wood, all the specimens of which seen by Dr. Bessels were coniferous, with very close ligneous layers, indicating that the specimens came from a cold climate.

The greater part of the meteorological registers were saved, embracing observations on the temperature of the air and on barometric oscillations, anemometric and hygrometric results, observations on terrestrial and solar radiation, on polar auroræ, and on ozone.

The fauna and flora of Hall's Land are very rich, but unfortunately nearly all the specimens collected were lost. Eight species of mammals were observed, twenty-three kinds of birds, fifteen species of insects, and seventeen species of plants. Of the mammals, *Myodes, spr.* (Pallas) and *Ovibos moschatus* (Zimm.) were found in West Greenland for the first time. The greater part of the insects are Diptera, of which one species is new.

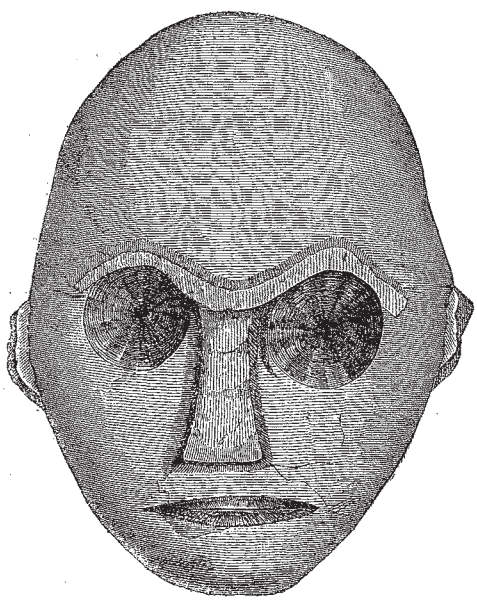
Although the geological formation of Polaris Bay and its neighbourhood presents only Silurian limestone, containing few fossils, yet some very interesting observations were made. At elevations of 1,800 feet, not only was drift-wood found, but also shells of molluscs (*Mya*, &c.), of species which still exist in the neighbouring seas. On examining some of the small lakes which abound in the region, marine crustaceans were found to be living in these fresh waters. This is certain evidence of the gradual elevation of the coast of this part of Greenland.

Wherever the country is not too steep, large numbers of erratic blocks are met with, of a kind quite different from the rocks on which they rest. There are blocks of granite, gneiss, &c., from South Greenland, and these blocks have evidently been borne, not by glaciers, but by floating icebergs; a proof that at one time the current in Davis Strait had a different direction, and passed from south to north. Dr. Bessels believes that Greenland has been separated from the American Continent in a direction from south to north.

ON THE OCCURRENCE OF A STONE MASK IN NEW JERSEY, U.S.A.

THE occurrence of stone "masks," such as the specimen referred to, has been somewhat frequent, in and about the "mounds" of the Ohio and Mississippi Valleys, but not eastward of these localities. Somewhat more

elaborate carvings of the human face have been found in Western New York, figures of which are given in the Thirteenth Annual Report of Regents of New York State University. These may or may not be of identical origin with the western mound specimens. The specimen here figured is, I believe, the only one ever found in New Jersey. It is a hard sandstone pebble, such as are common to the bed of the Delaware River, above tide water. It measures six inches in length by a fraction over four inches in greatest breadth. It is concavo-convex, the concavity being shallow and artificial. The carving of the front or convex side is very rude, but shows distinctly that it has been done with *stone tools* only. The eyes are simply conical counter-sunk holes, rudely ridged, and just such depressions as the stone drills, so common among the surface relics of this neighbourhood, would produce. In the collection of stone implements from Central New Jersey, at the Peabody Academy of Salem, Mass., are several drills sufficiently large to bore as wide and deep depressions as the "eyes" of this mask. The nose is very flat and angular; the mouth merely a shallow groove. The ears are broken, but appear to have been formed with more care than any other of the features. The chin is slightly projecting.



The interest attaching to this specimen is, I think, twofold, and worthy of a moment's consideration. It is interesting from the fact of being found in New Jersey, a point much further east than the mound-builders have been supposed to reach, and there is no reason to suppose that the specimen was ever brought by white men from the west, and lost here. The circumstances connected with its discovery render such a supposition untenable. Its interest, otherwise, is in the fact (as I suppose it) of its being a true relic of the mound-builders. The mystery of this people has certainly yet to be solved, if, indeed, it ever can be, and the relationship they bore to the "Indian" determined. In the prosecution of my investigations into the "stone-age" history of the New Jersey Indians, I was continually struck with the great resemblance of the stone-implements found in New Jersey to those found in the western mounds. The specimens figured by Messrs. Squier and Davis, in the first vol. of Smithsonian Contributions, 1847, were all, or nearly so, duplicated by specimens I gathered in New Jersey; and up to the time of the completion of my second paper on the Stone Age of New Jersey (now in press), I needed but "animal pipes" and stone masks, such as the above, to make the duplication of the mound-relics complete. The occurrence of this specimen brings it to the one form of pipes, and that such have occurred in New Jersey is highly probable; but not having gathered such a specimen, myself, I assume that none have yet been found. It must be borne in mind, however, that as there are no mounds in New Jersey, animal pipes, if found here, must occur as surface relics, or in graves; which latter were, as a rule, very shallow. As New Jersey has been settled for about two centuries, it is probable that such animal pipes would be gathered up, when found, and soon again lost or destroyed, when ordinary "relics" would be overlooked. In this way, such animal pipes would have all disappeared, perhaps a century ago, when their value as archæological specimens was unknown. This, too, might account for the great rarity of such specimens as the mask here described.

CHAS. C. ABBOTT

Trenton, New Jersey, U.S.A., April 22

*FERTILISATION OF FLOWERS BY INSECTS**

X.

Lilium Martagon.

C. SPRENGEL was the first to turn his attention to the structure of the beautiful flowers of this plant;† but he did not succeed either in observing insects visiting them or in explaining the contrivances by which they are cross-fertilised when visited by suitable insects. Since Sprengel's time nobody had, as far as I know, studied the manner of fertilisation of *Lilium Martagon*. It was, therefore, with great pleasure that, in Thuringia, I examined the structure of its flowers, and watched them in their natural habitat. The results of my observation were as follows.

Along the middle of each sepal and petal, beginning at its base and continuing throughout a length of 10-15 mm.,

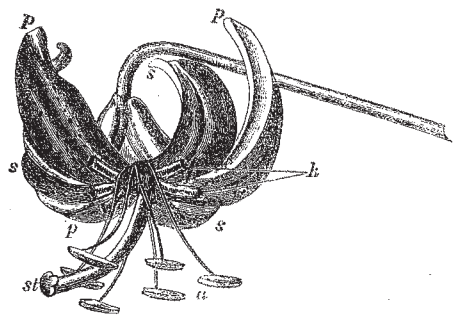


FIG. 63.—Flower of *Lilium Martagon* in its natural position and natural size.

is a furrow, which secretes honey, and whose margins converge and are bordered with reddish knobbed hairs, so close as to cover the open side of the furrow, and to convert it into a channel (*h*, Figs. 63, 64). The basal opening of this channel (*b*, Fig. 64) being closed by the base of a filament, the only way by which the honey is attainable is the small opening at the end of the channel (*e*, Fig. 64). This opening, as well as the channel itself, is very narrow, its diameter only a little exceeding 1 mm. No other insects except Lepidoptera are provided with sucking instruments sufficiently long and slender to be able to reach the honey concealed in these long and narrow channels; and from the flowers being turned downwards and the stamens projecting and slightly bending upwards, it is evident that Lepidoptera, when sucking this honey, cannot avoid dusting their under-side with pollen, and effecting cross-fertilisation as often as they fly to another

* Continued from vol. xi. p. 171.

† C. Sprengel, "Das entdeckte Geheimniss," &c., pp. 187–189